

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 Claim 1 (original): A method for determining the presence  
2 or concentration of a substance in a medium, the method  
3 comprising:

- 4 a) providing a sensor in the medium, wherein the  
5 sensor includes at least one optical carrier and a  
6 microsphere having a surface including receptors for  
7 the substance, each of the at least one optical  
8 carrier being coupled with the microsphere;
- 9 b) applying a light source to one of the at least one  
10 optical carriers of the sensor;
- 11 c) detecting a transmission spectra of light from one  
12 of the at least one optical carriers of the sensor;  
13 and
- 14 d) determining a presence or concentration of the  
15 substance based on a change in the transmission  
16 spectra the detected light.

1 Claim 2 (original): The method of claim 1 further  
2 comprising:

- 3 - determining a change in the transmission spectra of  
4 the light due to a factor other than adsorption of the  
5 substance onto the surface of the microsphere,  
6 wherein the act of determining a presence or  
7 concentration of the substance based on a property of the  
8 detected light, wherein the property is based on a change  
9 in the transmission spectra of the light, compensates for  
10 the determined change in the transmission spectra of the  
11 light due to a factor other than adsorption of the

12 substance onto the surface of the microsphere.

1 Claim 3 (original): The method of claim 2 wherein the  
2 sensor includes a second microsphere coupled with each of  
3 the at least one optical carrier,

4 wherein the second microsphere has a surface that is  
5 free of receptors for the substance, and

6 wherein the act of determining a change in the  
7 transmission spectra of the light due to a factor other  
8 than adsorption of the substance on the surface of the  
9 microsphere is based on a change in the transmission  
10 spectra of the light due to the second microsphere.

Claims 4-17 (canceled)